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Mexican Hydroptilidae (Trichoptera). By Martin E. Mosely
pp. 151–190

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MEXICAN HYDROPTILIDAE (TRICHOPTERA)

By Martin E. Mosely.

[Read 5th May, 1937.]

With Thirty-seven Text-figures.

Through the courtesy of Dr. Georg Ulmer, I have been enabled to examine and describe the Hydroptilidae collected by Dr. Alfons Dampf in Mexico.

Dr. Dampf's collection, of which, so far, well over 80,000 specimens have arrived in this country, has been made by the use of trap-lanterns and unfortunately, in many species, it has not been possible to find a complete example on which to base a description.

This paper covers a portion of the material captured in the states of Chiapas Sinaloa and Guerrero.

Up to the present, only a single Mexican Hydroptilid has been described, namely *Leucotrichia melleopicta* Mosely, an insect found amongst the British Museum accessions and labelled "Teapa, Tabasco, H. H. S." This species was included in an account of exotic Hydroptilidae published in these *Transactions*, Vol. 82, in 1934.

It is interesting to find that another genus, *Polytrichia*, of which a Jamaican species was described in the same paper, is well represented in the Mexican collection, three new species being here described. The genus *Protoptila* is represented by four and *Hydroptila* by five new species. Of the latter, it is of interest to note that in all excepting *H. mexicana*, very distinctive scent-organ structures have been observed.

Attention may perhaps be called to the new genus *Zumatrichia* of which two species are here described. This genus has the very unusual feature (in Trichoptera) of having, so far as can be seen, only two ocelli, that at the apex of the head being wanting. Moreover, the basal segments of the antennae are most unusual in form, triangular from above and attached to the head at the outer basal angles. There is also a plate projecting from each under surface. This structure may possibly function as a scent-organ.

A group of genera has been erected, *Exitrichia*, *Dolotrichia*, *Guerrotrichia* and *Lorotrichia*, which are all related to each other and also to Morton's *Neotrichia*. These genera include a large number of species and, although they could hardly be distinguished from one another on the usual characters which are accepted for the definition of genera in this family, namely neuration, spurs and the presence or absence of ocelli, yet I have deemed it advisable to separate them on additional characters derived from the genitalia in order to avoid the position that has unfortunately arisen in some of the older genera, more particularly *Hydroptila* and *Oxyethira*. Here are found a large number of incongruous forms placed in the same genus because they agree in neuration and the other customary characters, genitalia being entirely disregarded.

The Hydroptilid fauna of Central and South America is practically unknown and, in erecting what may be described as a generic framework, I hope it may be found that provision has been made for the hosts of new species that must eventually be discovered and described.

In conclusion, acknowledgment must be made here of the courtesy of Dr.

Dampf and Dr. Ulmer, who have presented all the types of species here described as well as half the Hydroptilid material in the collection to the British Museum. Dr. Ulmer, moreover, is presenting half the material of Mexican Trichoptera other than the HYDROPTILIDAE, which has been sent to him out of Dr. Dampf's extensive collection.

Protoptila Banks.

Protoptila Banks, 1904, *Proc. ent. Soc. Wash.*, **6** : 215 ; Betten, 1934, *N.Y. State Mus. Bull.*, **292**: 149–150, Pl. 12, figs. 1–5.

Neither Banks nor Betten in his account of this genus makes any comment on the very extraordinary genitalia of the female. In two of the Mexican species described in this paper, there is a remarkable structure of the eighth ventral segment which is produced in a very long corneous process through which passes a fine internal tube which originates in the abdomen. This tube can hardly be an ovipositor; it is present in the species *tenebrosa*, *maculata*, *lloydi*, described by me in 1934, *Trans. R. ent. Soc. Lond.*, **82**, though the structure is not there mentioned. In these species, there is no long process to the eighth segment and the tube is contained almost entirely within the abdomen. This formation is found also in the Mexican species *ixtala*.

It should be mentioned that in the Mexican species there is a cross-vein at the base of fork no. 5 of the posterior wing which I have been unable to trace in other described species.

The intermediate leg of the female is considerably dilated. The females described herein have been attributed to their respective males with no very definite evidence; it can be said, merely, that as there were present only single examples of ♂ and ♀ *rota* in the Dolores collection and numerous examples of both sexes of *salta*, the probability is that they are correctly placed. It would have been more satisfactory had fork no. 5 in the posterior wing of the female *rota* been sessile as in the male.

It is perhaps open to question whether *Protoptila* should not be placed in the RHYACOPHILIDAE rather than the HYDROPTILIDAE.

Genotype, *P. maculata* Hagen.

Protoptila rota sp. n. Figs. 1 and 2.

In the posterior wing ♂, fork no. 5 sessile but with a short footstalk in the ♀ as in *salta*.

Genitalia, ♂. From above, the apical margin of the eighth dorsal segment slightly concave; intermediate appendages each with a small basal and large second segment; from above, the basal segment and the basal parts of the second segments are turned somewhat outward, presenting flattened upper surfaces, the bases of the second segments resembling a pair of ears and the terminal parts bearing slight angular projections on their outer margins; from the side, the second segment has a strong angular projection on the upper margin towards the base; penis membranous with a transverse ridge and a minute spine at the apex on its dorsal surface; there are two incurving sheaths directed slightly downward and, beneath the penis, are two very long, fine spines close together, arising from broader bases; the processes of the penis, at the base, seen in a preparation through the abdominal walls from the side, somewhat resemble an axehead and there are two small projecting teeth on the lower margin; the eighth segment is strongly produced ventrally to make a long bifurcate process, from the side very wide at the base and within it, may be seen the strongly produced ninth segment with a widely excised apical margin; a short ventral process to the sixth segment.

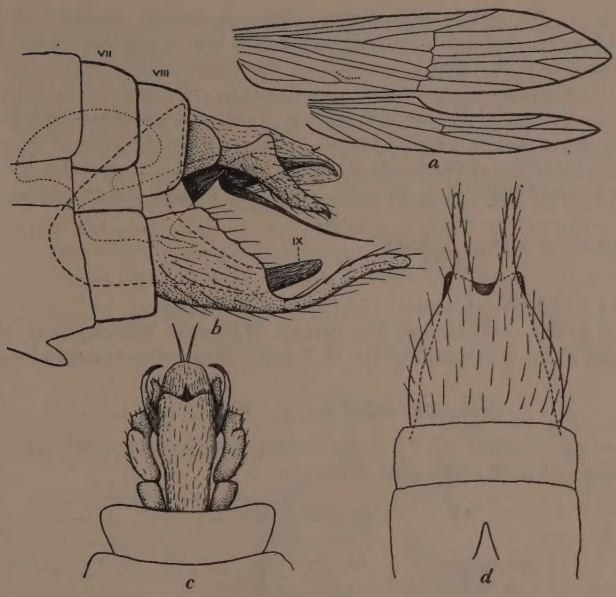

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FIG. 1, *a–d.—Protoptila rota* sp. n. ♂; *a.* wings, *b.* genitalia, lateral, *c.* dorsal, 8th and 9th sternites omitted, *d.* ventral.

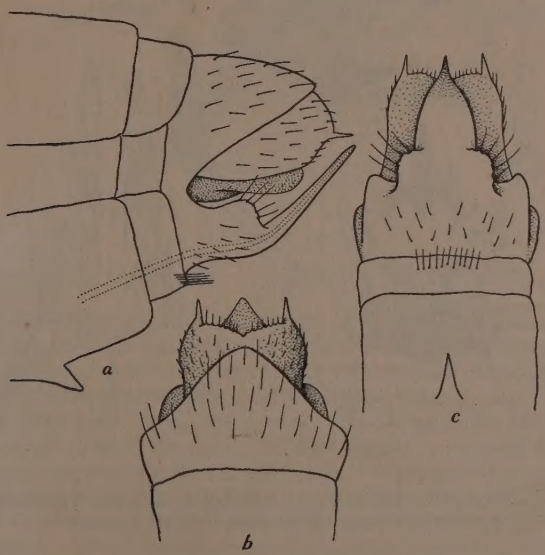

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FIG. 2, *a–c.—Protoptila rota* sp. n. ♀; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral.

Genitalia, ♀. The eighth segment from above is strongly produced at the centre of its apical margin; beyond it, the ninth segment is seen as two lobes fused together at their inner margins with a shallow excision at the centre of the slightly serrate apical margin; each outer angle is produced into a rather long, acute finger; ventrally, the eighth segment carries a long, slightly upwardly directed process with a wide base both from beneath and from the side; there is a strong process to the sixth ventral segment but none to the seventh where the centre of the margin is slightly produced and shrouded in a tuft of hairs. There is an internal tube, as in *P. salta*, extending through the process of the eighth segment.

Length of anterior wing, ♂, 3 mm.

" " " ♀, 4 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes in the British Museum and in the collection of Dr. G. Ulmer, from neighbouring localities.

Protoptila salta sp. n. Figs. 3 and 4.

Antennae 23-segmented in the ♂, the middle segments enormously dilated. In the posterior wing, fork no. 5 with a short foot-stalk.

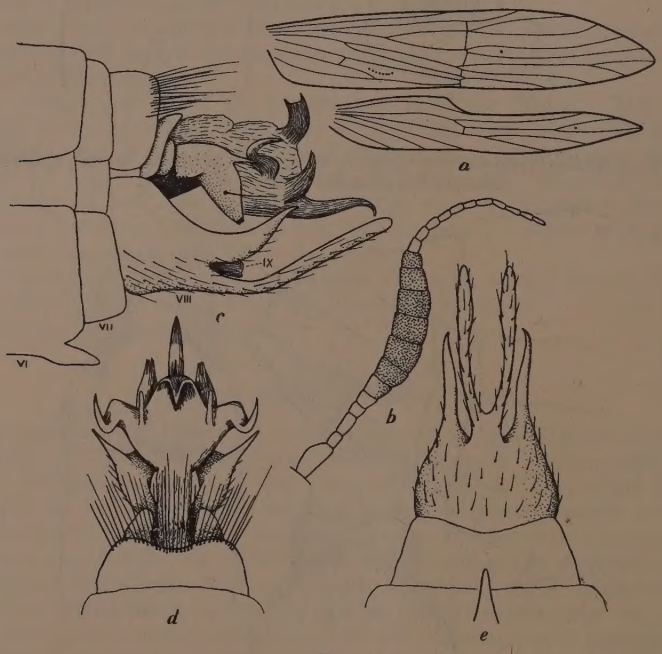

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Fig. 3, *a–e*.—*Protoptila salta* sp. n. ♂; *a*. wings, *b*. antenna, *c*. genitalia, lateral, *d*. dorsal, 8th and 9th sternites omitted, *e*. ventral.

Genitalia, ♂. From above, the eighth segment is very strongly chitinised and terminates in an excised apical margin fringed with strong hairs; beneath it may be seen two triangular processes which are possibly projections from the apical margin of the concealed

ninth segment; beneath these, again, are the two-segmented processes corresponding to those which in my description of *P. tenebrosa* Walker (1934, *Trans. R. ent. Soc. Lond.*, **82**) I suggested were intermediate appendages; in *salta*, the bases of these processes are short and, from the side, the second segments are rather stout and elbowed downward, each with a spur at about midway along its upper margin projecting posteriorly and outwards; the penis has an enormously dilated apex furnished with a pair of very slender, transparent dorsal rods and six hooks; the latter, from above, consist of an outer pair curving strongly upward and posteriorly, the pair of transparent rods arising at their bases; at the apex is a single upwardly and basally curving hook, broad and with a semicircular excision at its apex as seen from the side; on the lower surface and beneath the outer pair is another pair of heavily fringed hooks directed upwards and the sixth also arises from the lower

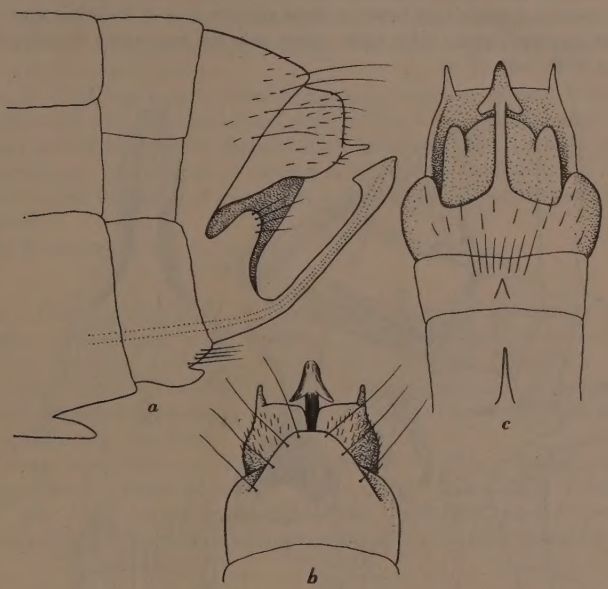

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FIG. 4, *a–c.—Protoptila salta* sp. n. ♀; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral.

surface and, from the side, is slender and sinuous, apex directed downward; eighth ventral segment much produced and furcate, each fork with a long and slender lower and rather wider and shorter upper branch which, seen from the side, terminates in a finger-like apex; there is a short ventral process to the sixth segment.

Genitalia, ♀. The eighth segment from above is produced at the centre of its apical margin into a blunt triangle; beyond it, the ninth segment terminates in two processes which from above and from the side are rectangular with the outer and lower angles produced into small acute fingers; there is a strongly chitinised plate beneath; ventrally, the eighth segment carries a long, strongly chitinised process extending slightly beyond the apex of the ninth segment, directed slightly upward with a sagittate apex from above and beneath, clavate from the side; from the side, the base of this process is broad and is partly separated from the tergite by a narrow, rounded excision; there is a fine tube (of unknown function) which arises from within the abdomen and passes through the centre of this process nearly

to the apex; there is a strong process to the sixth ventral segment and a smaller one to the seventh.

Length of anterior wing, ♂, 2·5 mm.
„ „ „ ♀, 4 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type ♂ and paratypes ♂ and ♀ in the British Museum collection. Paratypes ♂ and ♀ in Dr. G. Ulmer's collection, all from the same and neighbouring localities.

Protoptila ixtala sp. n. Fig. 5.

Wings chocolate brown with five or six nearly contiguous white spots across the anterior wing at the arculus, a single spot between these and the base of the wing towards the anal region, a pair, one beneath the other at the costa, near the apex and a few round the fringe; neuration as in *P. salta* sp. n.

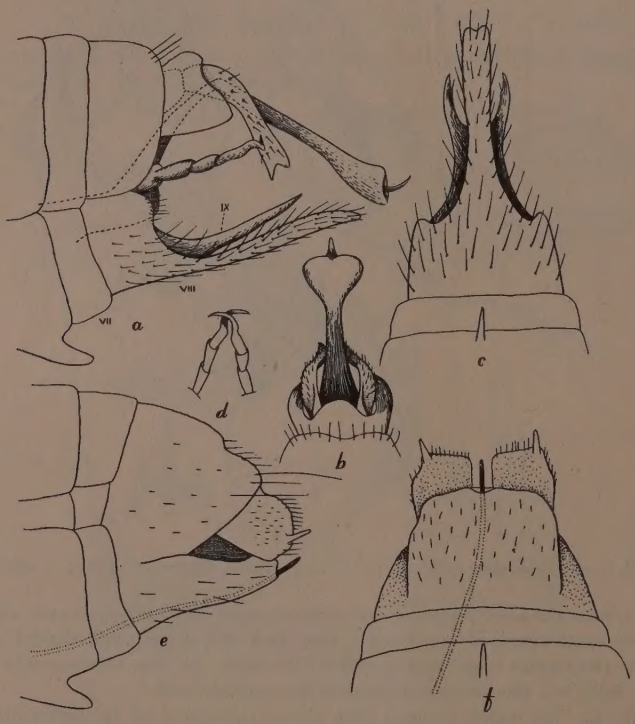

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Fig. 5, *a–f*.—*Protoptila ixtala* sp. n. ♂; *a*. genitalia, lateral, *b*. dorsal, the 8th and 9th sternites omitted, *c*. ventral, *d*. penis-sheaths (?) from above; ♀; *e*. genitalia lateral, *f*. ventral.

Genitalia, ♂. Dorsal margin of the ninth segment with the centre roundly produced and the lateral angles, which are also produced, separated from the centre by rounded excisions; from the side, the upper part of the segment is somewhat quadrate, apical

margin sinuous, lower part long and slender; lying above the produced ventral margin of the eighth segment; intermediate appendages from above, arising from a produced base or perhaps a basal segment withdrawn within the ninth abdominal segment, sinuous, sloping downward, from the side, rather elbowed, with a broad, bifurcate apex; penis most conspicuous; from above, with a constricted stem and broad, heart-shaped apex, slightly excised at the centre of its apical margin and with a projecting spine arising beneath the excision; from the side, bent downward at right-angles, the basal part slender from the side, plate-like from above; the terminal part broader, with the apex dilated on its underside; apical margin truncate, a slender, upcurving spine arising from about the centre; inferior appendages or perhaps the penis-sheaths gimlet-like, apparently three-segmented, terminal segments forming sickle-shaped hooks; the ventral margin of the eighth segment strongly produced into a long finger, from beneath with the apex slightly excised; the ventral margin of the ninth segment is seen to be bifurcate, the forks long and slender, separated by a rounded excision and appearing one on each side of the produced eighth segment; a stout process to the sixth ventral segment.

Genitalia, ♀. Terminal segment from beneath, rectangular; beyond it are seen two quadrate plates, each with the outer apical angle produced into a slender finger; from the side, the lower part of the terminal segment is produced and there is a long, slender tube within the abdomen; this tube can be traced as far back as the fourth segment and its apex projects beyond the terminal segment in a slender rod; a stout process to the sixth ventral segment.

Length of the anterior wing, ♂, 2·5 mm.
„ „ „ ♀, 3 mm.

Mexico: Chiapas, Huixtla, 21.xi.1930 (*A. Dampf*); Escuintla, 11.xi.1930 (*A. Dampf*); Mapastepec, 7.xii.1932 (*A. Dampf*); Saltenango de la Paz, 15.iii.1931 (*A. Dampf*); Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ (Huixtla) in the collection of the British Museum; paratypes ♂ and ♀ in the British Museum and the collection of Dr. G. Ulmer, of Hamburg, from various neighbouring localities.

This species resembles, in the construction of the genitalia, the north American species *P. tenebrosa* and *P. lloydi*, described in 1934, *Trans. R. ent. Soc. Lond.*, **82** : 151. In those species, what I described as the lower penis-cover is evidently the produced lower margin of the ninth ventral segment.

Protoptila resolda sp. n. Fig. 6.

Genitalia, ♂. Dorsal margin of the ninth segment sinuous, forming two wide, rounded projections with a wide, rounded excision between; intermediate appendages (?) from the side, long, directed downward, slightly constricted at the centre, apex slightly dilated and rounded; from above, they are difficult to make out and are shown in the figure as rounded continuations of the margin of the ninth segment; penis slender and rod-like; lower penis-cover trough-shaped, sides turned over and above the penis in flattened plates, a slight constriction before the apex which, from above, is widely truncate; from the side, the cover is deep at the base, lower margin straight and horizontal, upper, rounded and sloping downward; inferior appendages (?) with a wide base beyond which are two segments, the first, from the side, not so broad as the base but broader than the fringed terminal segment which, from the side, is sinuous; from above and beneath, outturned at the apex; ventral margin of the ninth segment showing, from the side, as an upturned spur arising towards the centre of the upper margin of the greatly produced eighth ventral segment; from beneath, the apical margin of the ninth segment is wide with the apical angles produced so that they are visible on each side of the margin of the produced eighth segment; this

segment is broad at the base both from the side and from beneath, with the centre produced into a long finger with a truncate apex as seen from beneath; a pointed process to the sixth ventral segment.

Length of the anterior wing, ♂, 2·75 mm.

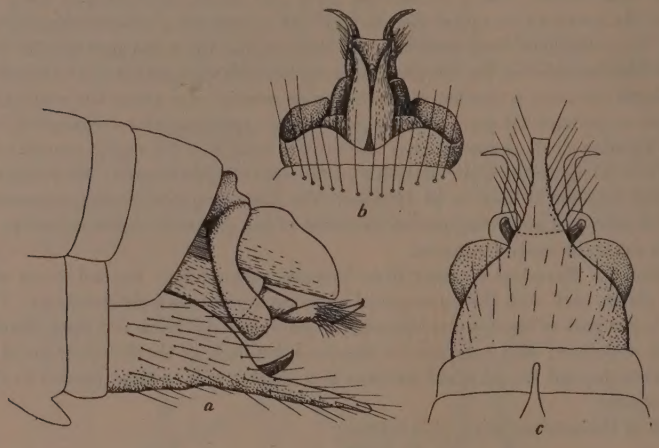

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Fig. 6, *a–c.*—*Protoptila resolda* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, 8th and 9th sternites omitted, *c.* ventral.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*); Saltenango de la Paz, 15.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Paratypes from the same and neighbouring localities, in the British Museum and Dr. G. Ulmer's collection.

Mexitrichia gen. n.

Spurs, 0, 4, 4; antennae about 27-segmented in the ♂; ocelli present; in the anterior wing, there is a pale streak across the anastomosis; the costal margin of the posterior wing is shallowly excised halfway towards the apex; a stout process to the sixth ventral segment in both sexes.

Close to *Mortoniella* but fork no. 5 in the posterior wing is absent and the genitalia differ widely.

Genotype, *Mexitrichia leroda* sp. n.

Mexitrichia leroda sp. n. Fig. 7.

For the general characters, see the generic description.

Genitalia, ♂. Ninth dorsal segment widely excised with a wide, flattened base to the excision; beyond it is jointed a large plate, probably fused superior appendages, with a rounded excision at the apical margin, the outer angles curving inward like a pair of horns; from the side, this plate is wide at the base with a strongly sinuous lower and a serrate upper margin; there is a very long, spine-like upper penis-cover, wider at the base; penis much exserted in the type, fleshy, apex membranous and furnished with a pair of stout, black teeth; sheaths (?) very long and slender, dilated before the apices; lower penis-cover (?)

with two outstanding wings and an asymmetric central spine-like process directed to one side; no inferior appendages; a stout process to the sixth ventral segment.

Genitalia, ♀. There is a dorsal plate with a pair of short, divergent, finger-like processes; from the side, the ventral margin of the ninth segment is produced into a quadrate process; from beneath, the eighth segment is excised at the centre of the apical margin and, in the

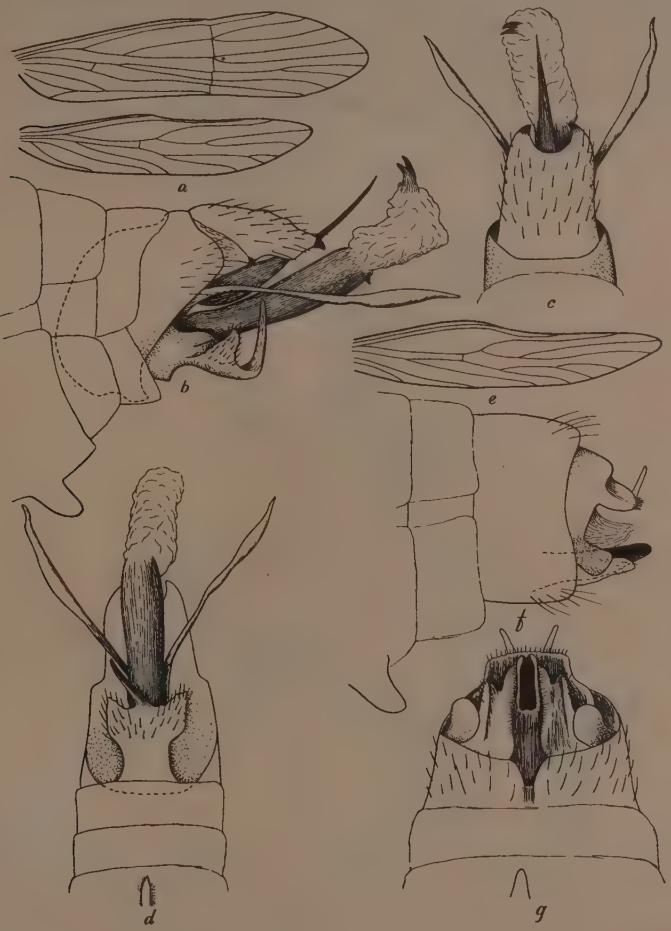

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FIG. 7, *a–g*.—*Mexitrichia leroda* sp. n. ♂; *a*. wings, *b*. genitalia, lateral, *c*. dorsal, *d*. ventral; ♀, *e*. posterior wing, *f*. genitalia, lateral, *g*. ventral.

centre of the excision, arises a tongue-like process with the centre of the apical part very deep black; there is a round process towards each lateral margin and a pair of plates with apices deeply excised, between them and the central tongue; a stout process to the sixth ventral segment.

Length of anterior wing, ♂ 2·6 mm., ♀ 2·75 mm.

Mexico: Chiapas, Barranca Honda, 24.ii.1931; Saltenango de la Paz, 15.iii.1931 (*A. Dampf*); Dolores, 16.iii.1931 (*A. Dampf*); San Antonio, Nexapa, 20.xi.1931 (*A. Dampf*); La Suiza, 5.iii.1931 (*A. Dampf*); La Prusia, 25.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum; other paratypes ♂ from various localities in the neighbourhood, in the British Museum and the collection of Dr. G. Ulmer of Hamburg.

In the ♀, the posterior wing differs slightly in neuration from that of the ♂. It is not, however, impossible that the example under observation may be aberrant or that neuration in the genus may vary in individuals.

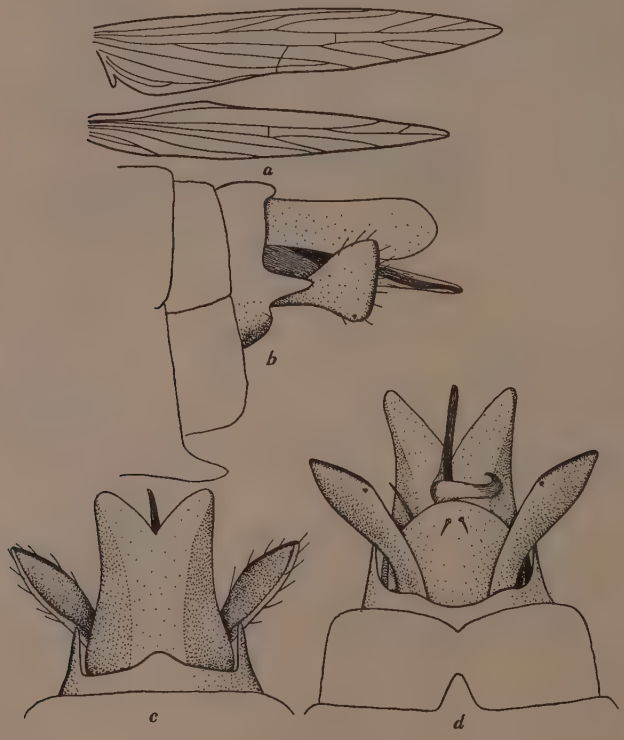

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Fig. 8, *a–d.*—*Hydroptila mexicana* sp. n. ♂; *a*. wings, *b*. genitalia, lateral, *c*. dorsal, *d*. ventral.

Hydroptila mexicana sp. n. Fig. 8.

H. mexicana is a well-defined *Hydroptila* belonging to the *sparsa* group, but, apparently, with no scent-organ beneath the scent-organ caps, which are not particularly large or prominent.

Unfortunately, the examples of the species, taken in a light-trap, are not in a condition for parts other than the genitalia to be described.

Genitalia, ♂. Centre of the margin of the terminal dorsal segment slightly produced; dorsal plate as usual in the group, large, excised at its apex with rounded apical angles, rather broad from the side; side-pieces rather long; penis with a very wide, curled hook about midway and a fine, subsidiary branch extending from the left of the lower penis-cover seen from beneath; lower penis-cover very large, apical margin rounded, with a pair of bristles towards the centre below the apical margin; inferior appendages very large, with wide, truncated and blackened apical margins; from above and below, they are rather widely divergent; a short, stout process to the seventh ventral segment.

Length of anterior wing, ♂, 2·5 mm.

MEXICO: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type and paratypes ♂ in the collection of the British Museum. Other paratypes in the collection of Dr. G. Ulmer, Hamburg, from the same or neighbouring localities.

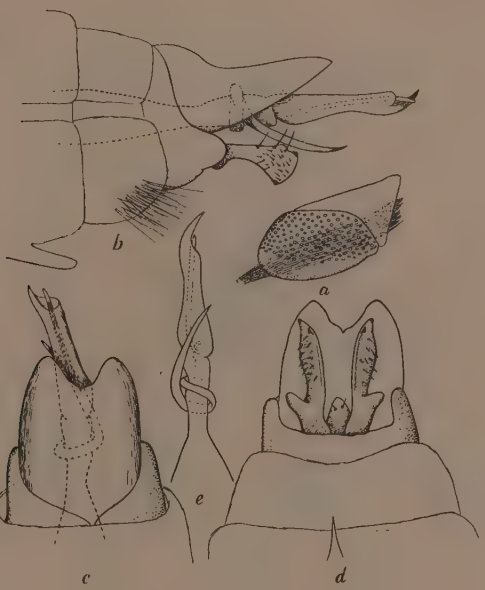

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FIG. 9, *a–e.*—*Hydroptila icona* sp. n. ♂; *a.* scent-organ cap with eversible filament, *b.* genitalia, lateral, *c.* dorsal, *d.* ventral, *e.* penis.

Hydroptila icona sp. n. Fig. 9.

Antennae about 30-segmented in the ♂, some of the segments being white, others black, the three terminal segments white; scent-organ caps long and narrow; scent-organ consisting of a pair of eversible filaments clothed with fine hairs; wings conforming to the usual pattern in *Hydroptila*.

Genitalia, ♂. Dorsal plate very large, apical margin forming two rounded lobes with a wide excision between; penis unusually stout with a sheath partly curled round the stem, leaving the apical part free and, as seen from the side, slightly curved beneath the penis; the penis itself is sleeve-like with one side of the apex produced into a pointed process and

with a central tube projecting beyond it; lower penis-cover very transparent, conical, with two bristles near the apex; side-pieces of the ninth segment broad and rounded; inferior appendages from the side, with dilated, clavate apices which bear black spots at the lower and upper angles; a row of stiff spines along the upper margin; from beneath, the lateral margins are produced towards the base in short processes with rounded apices; the margin of the ninth ventral segment is deeply and widely excised; a short, pointed process to the seventh ventral segment.

Length of the anterior wing, ♂, 2 mm.

Mexico: Chiapas, Dolores, 16.iii.1931; Saltenango de la Paz, 15.iii.1931; Sinaloa, Badiraguata, 30.iii.1932 (all *A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes from the same and neighbouring localities, in the British Museum and the collection of Dr. G. Ulmer.

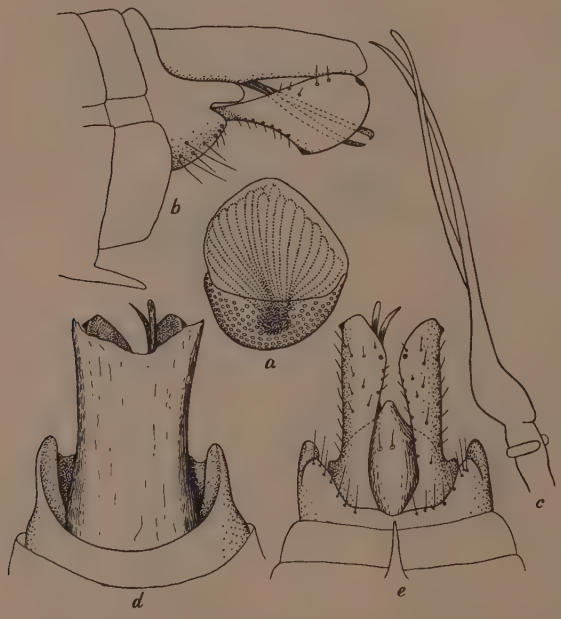

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Fig. 10, *a–e.*—*Hydroptila meralda* sp. n. ♂; *a.* scent-organ cap with scent-hairs, *b.* genitalia, lateral, *c.* penis, *d.* genitalia, dorsal, *e.* ventral.

Hydroptila meralda sp. n. Fig. 10.

Antenna with about 35 segments; scent-organ cap acorn-shaped with the cap considerably smaller than the acorn, scent-hairs very broad, possibly attached to an eversible filament; the caps seem peculiarly attached, with the upper margins caught in a fold so that they lie very close to the head and, in the example under examination, cannot be lifted for inspection of the hairs underneath.

Genitalia, ♂. Dorsal plate with the apical margin widely excised (somewhat torn in the type); no lateral, angular dilatations at the base; side-pieces of the ninth segment rounded;

penis forming two long, slender spines with no right-angled hook as is found in many of the *Hydroptila* species; lower penis-cover very broad at the base, apex acute and produced, two short spines arising at the centre and towards the apex; inferior appendage from the side, with a slender stem and much dilated apex and with two black warts at the upper and lower apical angles; from beneath, the upper of these warts forms a distinct angular projection; margin of the ninth segment concave from above, concave and sinuous from beneath; a long, pointed process to the seventh ventral segment.

Length of the anterior wing, ♂, 2 mm.

MEXICO: Chiapas, Esmeralda, 19.xi.1930 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Other paratypes from the same or neighbouring localities, in the British Museum and the collection of Dr. G. Ulmer.

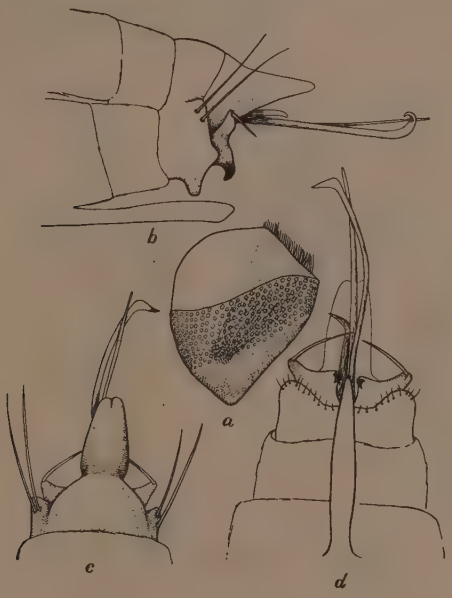

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FIG. 11, *a–d*.—*Hydroptila modica* sp. n. ♂; *a*. scent-organ cap with scent-hairs, *b*. genitalia, lateral, *c*. dorsal, *d*. ventral.

Hydroptila modica sp. n. Fig. 11.

Scent-organ caps of the usual " cup and acorn " pattern but with the " cup " unusually wide and somewhat produced on the inner edge; beneath the caps is a pair of eversible filaments clothed with dark hairs; wings of the usual *Hydroptila* pattern.

Genitalia, ♂. Ninth dorsal segment produced and rounded; beyond it is a boat-shaped plate as in the European species *femoralis*, apex excised; beneath this plate extends the penis and sheath, both long and spine-like; apex of the penis bent at right-angles; a single broad sheath visible at a point midway under the dorsal plate, apex turned to one side at a wide angle; inferior appendages very broad, inner angles close together forming blackened hooks directed downwards, outer angles produced outwardly and upwardly as seen from beneath, each armed with a long, transparent spine, directed nearly horizontally over the

appendage; margin of the ninth ventral segment widely excised; a long, stout process to the seventh ventral segment extending as far as the apices of the inferior appendages.

Length of the anterior wing, ♂, 2 mm.

Mexico: Chiapas, Dolores, 16.iii.1931; Saltenango de la Paz, 15.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Other paratypes in the British Museum and the collection of Dr. G. Ulmer from the same and neighbouring localities.

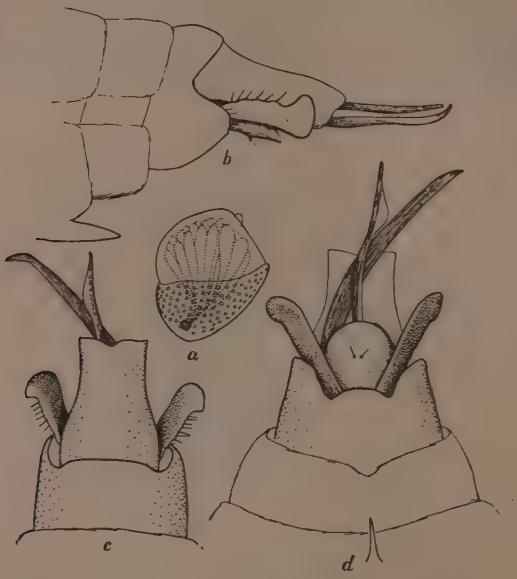

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Fig. 12, *a–d*.—*Hydroptila paschia* sp. n. ♂; *a*. scent-organ cap with scent-hairs, *b*. genitalia, lateral, *c*. dorsal, *d*. ventral.

Hydroptila paschia sp. n. Fig. 12.

Antenna about 37-segmented; scent-organ consisting of dense masses of broad scale-like hairs lining the caps which are of the typical form in *Hydroptila*; wings as in *mexicana*.

Genitalia, ♂. Ninth dorsal segment produced in the centre of its apical margin; dorsal plate long, broad at the base, narrowing to a truncate apex which has a somewhat sinuous margin, excised slightly at its centre; penis and single sheath long, and sinuous, sheath rather the longer and crossing the penis towards the apex; no right-angled bend to the penis; there is a lower penis-cover with a rounded apex and two short, stout, projecting spines in the centre of its ventral surface; the inferior appendages widely diverging, with apices slightly dilated and a row of stiff bristles along the upper margin; a short pointed process to the seventh ventral segment.

Length of anterior wing, ♂, 2 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type ♂ and paratypes ♂ in the collection of the British Museum from the

same or neighbouring localities; further paratypes in the collection of Dr. G. Ulmer, of Hamburg.

Loxotrichia gen. n.

Spurs, 0, 3, 4; antennae about 29-segmented in the ♂; ocelli present; anterior wing very broad, produced and acuminate at its apex; posterior wing with the costal margin elevated at a point nearly midway, then produced and acuminate.

Ventral margin of the ninth segment produced and bifurcate; a ventral process to the seventh segment.

Genotype, *Loxotrichia azteca* sp. n.

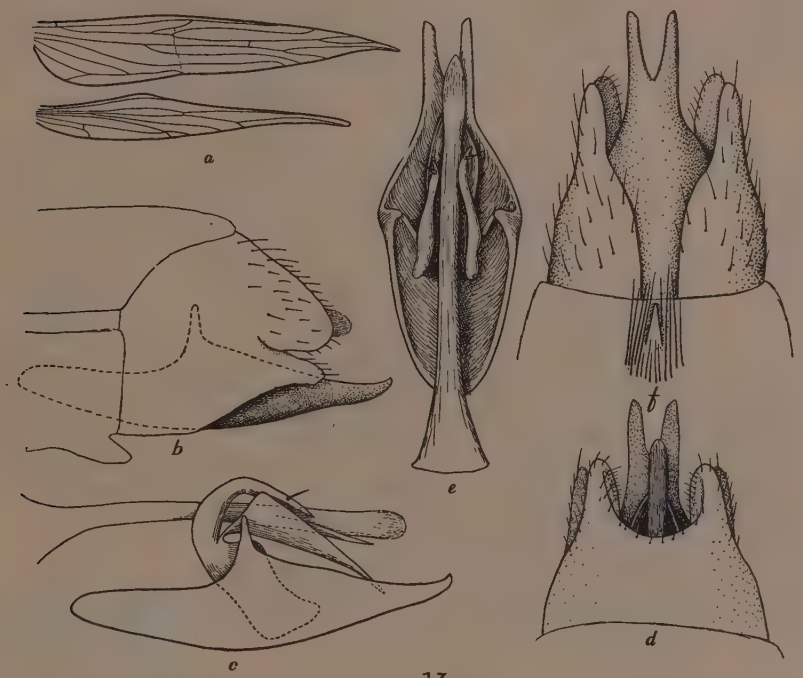

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Fig. 13, *a–f.—Loxotrichia azteca* sp. n. ♂; *a.* wings, *b.* genitalia, lateral, *c.* internal structures, the penis, etc., lateral, *d.* genitalia, dorsal, *e.* penis-sheaths and 9th sternite, dorsal, *f.* genitalia, ventral.

Loxotrichia azteca sp. n. Fig. 13.

Antennae with the first seventeen segments white, the next three black, the next one white, the next five black and the last three white.

Genitalia, ♂. The ninth segment is retracted within the eighth with the exception of the produced lower, bifurcate margin; each fork of this margin is long and slender, with a deep excision between; the eighth dorsal segment bears a deep, U-shaped excision at the apical margin and in it may be seen a spatulate-shaped penis; from the side, the margin of the eighth segment is divided by a narrow excision, the upper part, broad and rounded, the lower, narrow; from beneath, the ventral margin of the segment is excised right to

the base so that two processes are formed with wide bases and finger-like apices; these processes are so heavily fringed that they conceal the genitalia from beneath; in a balsam preparation, a complicated, internal structure can be made out consisting of a pair of asymmetric, arching, sinuous sheaths and a lower penis-cover which, from the side, is broad at the base and tapers to an acute and downwardly directed apex; a slender spine may be seen beneath the penis, varying in length in individuals; there is a short, pointed ventral process to the seventh segment.

Length of the anterior wing, ♂, 2 mm.

Mexico: Chiapas, Dolores, 16.iii.1931; Santa Ana, 25.ii.1931; La Suiza, 7.iii.1931; La Prusia, 25.iii.1931; Saltenango de la Paz, 15.iii.1931 (all *A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes ♂ and ♀ from the same and neighbouring localities, in the British Museum and the collection of Dr. G. Ulmer.

Loxotrichia dalmeria sp. n. Fig. 14.

Wings as in *L. azteca*.

Genitalia, ♂. Dorsal margin of the eighth segment widely excised. There may possibly be a membranous plate, but this is doubtful in the example under observation. The ninth segment is only visible from below and from the side and the position of its upper margin is doubtful. In the excision of the eighth segment, from above, may be seen two very strongly chitinised black spines, the apices of which are bent inwards at right angles, the bent apices lying one above the other, but this position varies in different individuals; penis long with a sinuous spur towards the membranous, inflated apex; from the side, below the penis, may be seen a structure, either the lower penis-cover or possibly pertaining to the upper part of the ninth segment; the lower margin of the ninth segment is produced and bifurcate but with the forks much shorter than in *azteca*, and from the side, directed slightly upward; there is a second bifurcate process lying closely above the forks of this segment, the apices just visible from beneath and from the side; each fork of the ninth segment is reinforced beneath with a strong ridge; the margin of the eighth sternite is widely excised, the excision extending to the anterior margin of the seventh segment, which carries a stout process concealed in a dense mat of hairs.

Length of the anterior wing, ♂, 2 mm.

Mexico: Chiapas, Esmeralda, 19.xi.1930 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Other paratypes from the same and neighbouring localities, in the collection of the British Museum and of Dr. G. Ulmer.

Costatrichia gen. n.

Spurs, 1, 3, 4. Ocelli present; antennae clothed with much broadened hairs, 19-segmented; basal segment long and broad, second cup-shaped, next six short, very broad and flattened, the remaining segments normal in character to the apex so that the antenna resembles the backbone of a vertebrate animal; maxillary palpi, the two basal segments short, third long, fourth short, fifth longer than the third; anterior wing with a long cylindrical structure on the costa near the base; in a balsam preparation, this structure is seen to be a pocket filled with long hairs; neuration difficult to make out; in the anterior wing there is apparently a kind of central rib which gives the neuration a resemblance to the veining of a narrow leaf; the fifth ventral segment carries a pair of small warts bearing tufts of hairs. It should be mentioned, however, that this or homologous structures occur in many other genera of the Hydroptilidae.

Genotype, *Costatrichia lodora* sp. n.

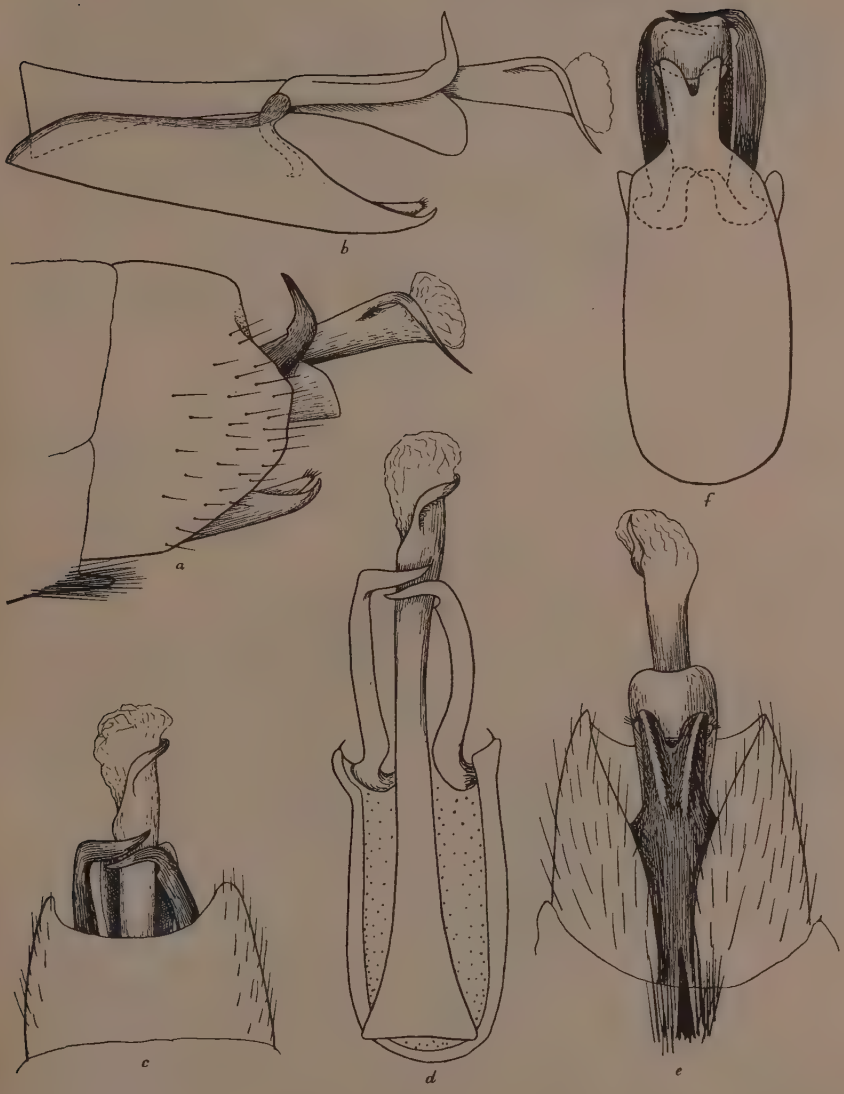

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FIG. 14, *a–f.*—*Loxotrichia dalmeria* sp. n. ♂; *a.* genitalia, lateral, *b.* internal structure, lateral, *c.* genitalia, dorsal, *d.* internal structure, dorsal, *e.* genitalia, ventral, dorsal spines omitted, *f.* internal structures, etc., ventral.

Costatrichia lodora sp. n. Figs. 15 and 16.

To the description already given under the generic characters may be added that the eighth segment as well as the ninth is of the strongly chitinised capsule pattern.

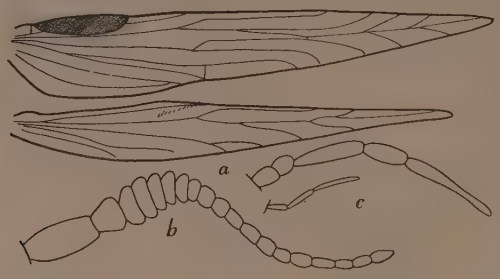

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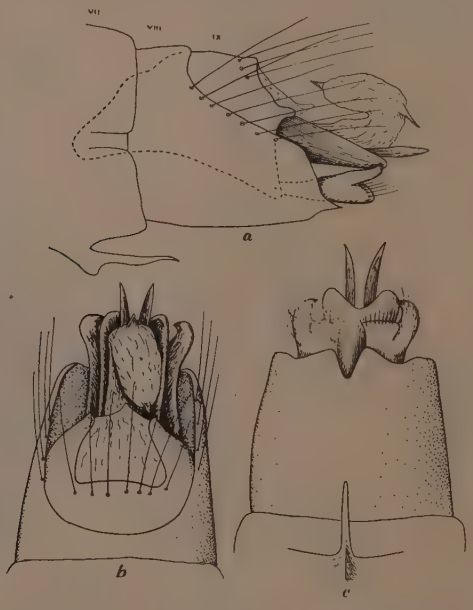
Fig. 15, *a–c.*—*Costatrichia lodora* sp. n. ♂; *a.* wings, *b.* antenna, *c.* maxillary and labial palpi.



16

Fig. 16, *a–c.*—*Costatrichia lodora* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral.

Genitalia, ♂. Lower half of the eighth segment produced considerably beyond the upper, with the sides bearing a few unusually long, stiff hairs; dorsal margin of the segment widely excised; the ninth segment appears in the excision, also widely excised and with a membranous dorsal plate which bears a minute projection at the centre of its apical

margin; at each angle of the excision of the ninth segment is a short process projecting tailwards; penis large and broad with a membranous apex folded back and armed at its tip and at the bend with single transparent spines; beneath it is a pair of long sheaths; there is a long and broad lower penis-cover with an excised apex; inferior appendages two-branched, inner branches with broad truncate apices; outside and above these, the second branches are rather broad, narrowing to hook-like apices directed inwards; the eighth ventral segment bears on its apical margin two triangular projections with a deep V-shaped excision between; a long process with a stout keel-like base and produced apical part arises from the seventh ventral segment.

Length of anterior wing, ♂, 2 mm.

MEXICO: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type ♂ and paratypes ♂ in the collection of the British Museum; other paratypes ♂ in the collection of Dr. G. Ulmer, Hamburg, from the same or neighbouring localities.

Dampfitrichia gen. n.

Spurs, 0, 3, 4; ocelli present; two large "caps" at the back of the head but no scent-organ beneath them; wings very long, apices produced and acuminate; costal margin of the posterior slightly elevated towards its base.

Other characters are given in the specific description.

Genotype, *Dampfitrichia ulmeri* sp. n.

Dampfitrichia ulmeri sp. n. Fig. 17.

Anterior wing light ochraceous, tip black; two conspicuous dark patches on the costal fringe, one from the base to about half-way, the other nearer the base.

Genitalia, ♂. Ninth segment almost entirely withdrawn within the eighth; dorsa margin of the eighth widely excised almost to the base, apical angles produced in slender fingers which, from the side, arise from broad, triangular bases; in the centre of the excision, through a transparent and rounded dorsal plate may be seen the penis which protrudes from a sleeve which reaches to about half-way up the visible portion; terminal part slender with the apex curled round at right-angles; beneath the penis is a strongly chitinised plate, which, seen from above, has a widely excised apical margin and produced apical angles; on each side of this plate is a pair of small, rounded processes, the outer armed with a pair of stout bristles, the inner with only one; there is also a large, triangular plate with an acute apex as seen from above and beneath, curving upward from the side; this is the ventral margin of the ninth segment; eighth ventral segment widely and roundly excised, the apical angles slightly produced; no ventral process.

Length of the anterior wing, ♂ and ♀, 1·75 mm.

MEXICO: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*); Saltenango de la Paz, 15.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes ♂ and ♀ from the same and neighbouring localities, in the British Museum and the collection of Dr. G. Ulmer.

I have pleasure in dedicating this genus to Dr. A. Dampf, whose collection of Mexican HYDROPTILIDAE far exceeds in numbers and value any others made in the whole of the American continent. I dedicate the species to our mutual friend, Dr. G. Ulmer, at whose invitation I have been enabled to work out the collection.

Exitrichia gen. n.

Spurs, 0, 2, 3; antennae about 18-segmented in the ♂; ocelli present; side-pieces of the ninth segment produced and usually, but not always, with clavate apices as seen from the

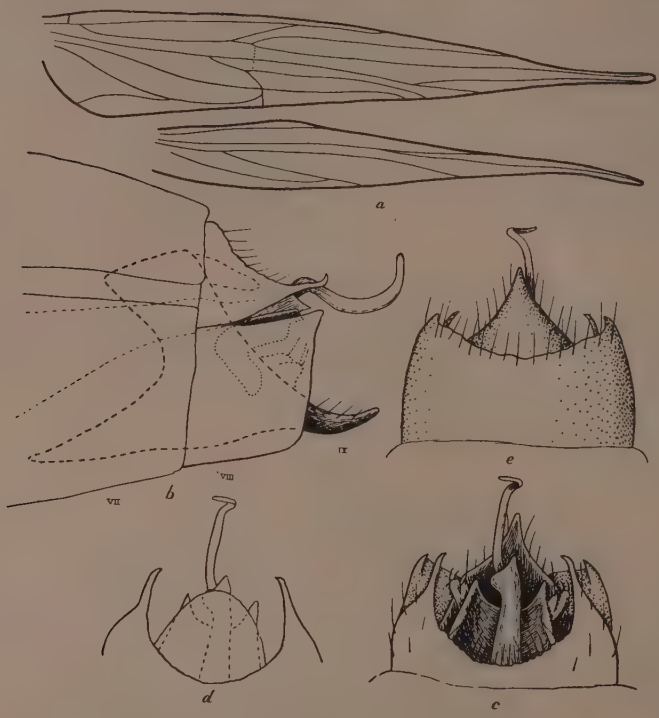


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Fig. 17, *a–e.—Dampfitrichia ulmeri* sp. n. ♂; *a.* wings, *b.* genitalia, lateral, *c.* dorsal, dorsal plate omitted, *d.* dorsal plate, etc., *e.* genitalia, ventral.

side; no ventral process; anterior wing rather short, with the costal area apparently somewhat thickened towards the base, neuration very simple and incomplete.

Genotype, *Exitrichia anahua* sp. n.

Exitrichia anahua sp. n. Fig. 18.

Genitalia, ♂. Apical margin of the ninth dorsal segment produced into a square, membranous plate, with the sides strongly chitinised and the apical angles slightly produced; from the side, these apical angles appear as distinct and slightly curved processes with rather broad bases and acute apices; from above, there is a punctate patch towards the basal margin of the segment; penis retracted in the example under description and terminating in two blackened claws and with the usual tube curled round the stem below the apex; side-pieces of the ninth segment with constricted stems and enormously

dilated apices, apical margins serrate; in a balsam preparation, from beneath, there can be seen a pair of intermediate appendages (?) terminating in somewhat truncate apices with produced inner angles, downturned as seen from the side; there is a lower penis-cover in the form of a broad plate with the apical margin produced at the centre in a long, downwardly directed finger; inferior appendages from beneath, arise from broad bases and are cut away on their inner margins nearly at right-angles, leaving slender,

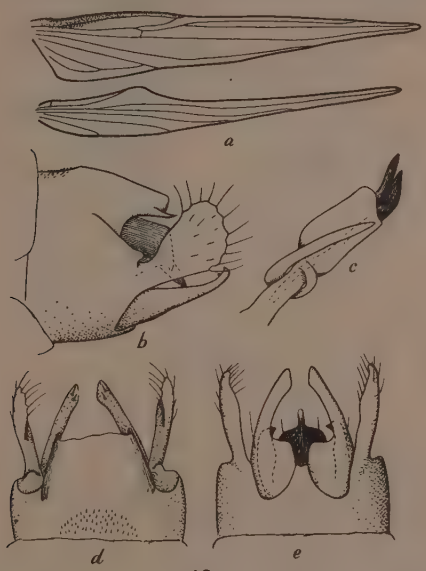

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Fig. 18, *a–e.*—*Exitrichia anahua* sp. n. ♂; *a.* wings, *b.* genitalia, lateral, *c.* penis, *d.* genitalia, dorsal, *e.* ventral.

slightly incurving terminations with obliquely truncate apices, each armed with a pair of short bristles on its upper surface just short of the apical margin; ninth ventral segment produced at the centre of its apical margin into a triangular process with a truncate apex bearing a minute excision at the centre.

Length of the anterior wing, ♂, 1·25 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum; other paratypes ♂ in the British Museum and the collection of Dr. G. Ulmer, of Hamburg, all from the same or neighbouring localities.

Exitrichia digitata sp. n. Fig. 19.

Genitalia, ♂. Dorsal margin of the ninth segment produced into a large, rounded plate with a small excision at the centre of its rounded apical margin; side-pieces of the segment large, lower margin convex, apices dilated and outer margins serrate, sparsely fringed with long hairs; lower penis-cover (?) from beneath, with a widely excised apical margin, apical angles each bearing a single bristle and appearing as a pair of downturned hooks; seen from the side, there is a thin, upper, projecting shelf and a short, finger-like process on each side of the cover, appearing as a small triangular projection on the basal margin;

penis long and slender, apex rounded, with a pair of blackened claws in a membranous sheath; a long, thin tube arises midway and runs parallel with the main stem; inferior appendages from beneath, appear as two large, blackened fingers, each with an upper, claw-shaped branch towards the centre, directed outwards; these branches are only visible in cleared examples; from the side, the lower margin of the appendage is sinuous, upper,

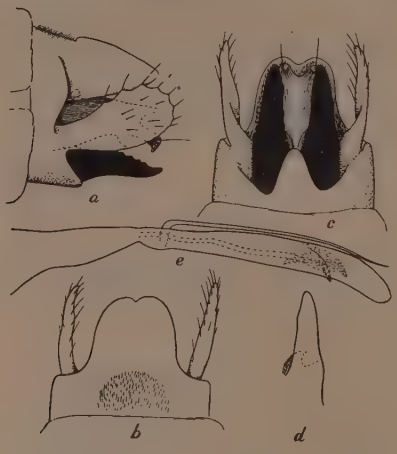

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Fig. 19, *a–e.*—*Exitrichia digitata* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral, *d.* an inferior appendage, ventral, *e.* penis.

strongly serrate; ventral margin of the ninth segment produced at its centre into a strong, triangular process.

Length of the anterior wing, ♂, 1·25 mm.

Mexico: Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes ♂ in the British Museum and the collection of Dr. G. Ulmer, of Hamburg, all from the same or neighbouring localities.

Exitrichia eroga sp. n. Fig. 20.

Genitalia, ♂. Apical margin of the ninth segment produced into a pair of rounded lobes with a small, wide excision between; side-pieces of the ninth segment very large, from the side, much dilated at the apices on the upper sides; from above, the stems are slender, expanding inwards towards the apices so that the inner margins are bent at obtuse angles; the apices are thus very broad with obliquely truncate margins; penis long and slender, with an external tube arising from about the centre, apex possibly wanting in the example under description as the usual blackened hooks or spurs are not visible; lower penis-cover broad, apical margin truncate, bearing two widely separated warts, each armed with a single bristle; inferior appendages long, as seen from beneath, arising from wide bases, inner margins cut away at right-angles about midway, leaving slender, paralle terminations with a deep U-shaped excision between; each appendage carries a small, black upper branch lying close above the broad base; ninth ventral segment excised,

with an approximately hexagonal, unpigmented area, upper side excised, situated above the excision.

Length of the anterior wing, ♂, 1·5 mm.

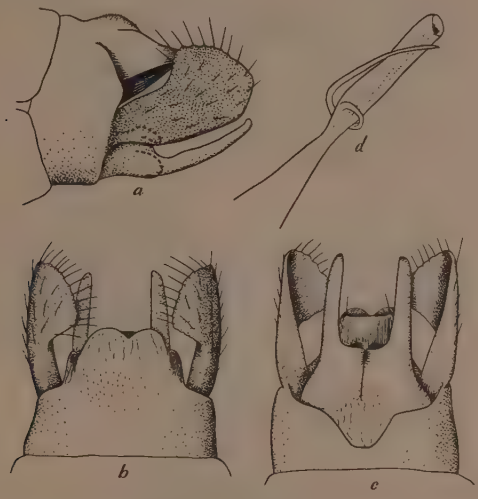

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Fig. 20, *a–d.—Exitrichia eroga* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral, *d.* penis.

Mexico: Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes ♂ in the British Museum and the collection of Dr. G. Ulmer, of Hamburg, from the same or neighbouring localities.

Exitrichia esmalda sp. n. Fig. 21.

The example of this species under description is slightly damaged, the dorsal margin of both eighth and ninth segments being torn.

Genitalia, ♂. From above, there are two strongly chitinised, stout processes with blackened, slightly incurving, acute apices; between them is a long penis, apex furnished with a rather long spine, a branch arising towards the base and lying across the genitalia; side-pieces of the ninth segment from above, slightly longer than the upper processes; from the side, rather long and narrow, upper margin carrying some short bristles; lower penis-cover about the same length as the side-pieces, apex truncate and furnished beneath with a pair of diverging bristles; inferior appendages very stout, from the side, with a truncate apex, lower apical angle blackened, the upper produced into a short, acute hook; from beneath, the bases approximate, the inner margins diverging slightly to the truncate apices; inner apical angles blackened and produced slightly inward; margin of the ninth ventral segment produced at its centre into a triangular process.

Length of the anterior wing, ♂, 1·5 mm.

Mexico: Chiapas, Esmeralda, 19.xi.1930 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Other paratypes, from the

same and neighbouring localities, in the collection of the British Museum and of Dr. G. Ulmer.

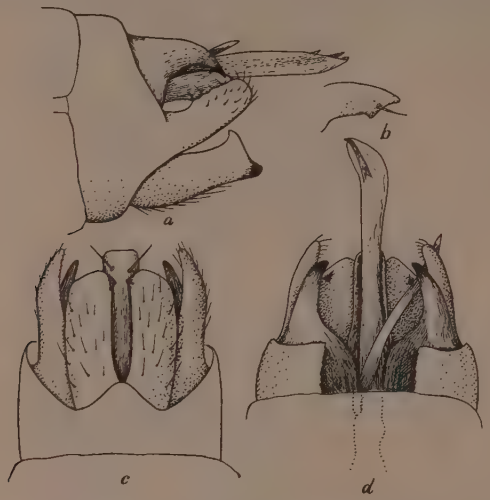

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Fig. 21, *a–d.—Exitrichia esmalda* sp. n. ♂; *a*. genitalia, lateral, *b*. apex of the lower penis-cover, lateral, *c*. genitalia ventral, *d*. dorsal.

Exitrichia exicoma sp. n. Fig. 22.

Genitalia, ♂. Margin of the ninth dorsal segment produced into a large plate slightly excised at the centre of its apical margin; towards the base of the segment is a patch of

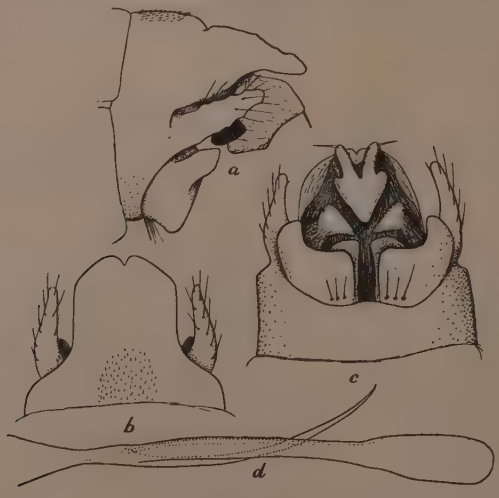

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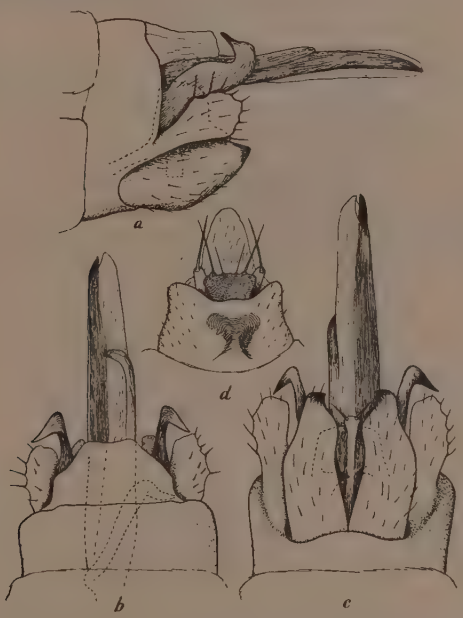
Fig. 22, *a–d.—Exitrichia exicoma* sp. n. ♂; *a*. genitalia, lateral, *b*. dorsal, *c*. ventral, *d*. penis.

short, fine hairs; side-pieces of the ninth segment are fringed with wide-spread hairs and extend not quite so far as the apex of the dorsal plate; they appear slightly elbowed from above; from the side, margins serrate, apex slightly narrower than the base; beneath the dorsal plate is a large lower penis-cover (?) roughly pear-shaped from the side; from beneath, very broad at the base with two divergent finger-like ridges beneath the apex, each armed with a stout outwardly-directed spine; in the figure, the cover is slightly raised out of place; there are two intermediate appendages (?), stout and clavate from the side; from beneath, apices having the appearance of birds' heads, beaks directed towards each other; penis long, apex spatulate, a single slender spine arising midway, directed to one side; inferior appendages from beneath, stout and incurving, each with its apical margin rectangularly excised; a supplementary plate behind each towards its inner margin; from the side, irregular in shape.

Length of the anterior wing, ♂, 1·5 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum; other paratypes ♂ in the British Museum and the collection of Dr. G. Ulmer, of Hamburg, all from the same or neighbouring localities.



23

Fig. 23, *a–d.—Exitrichia olorina* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral, *d.* genitalia ♀, ventral.

Exitrichia olorina sp. n. Fig. 23.

Wings ochraceous with little horizontal streaks of fuscous hairs scattered along the length of the anterior.

Genitalia, ♂. Apical margin of the ninth dorsal segment slightly produced and truncate; beyond it is a broad dorsal plate of nearly the full width of the ninth segment at its base,

narrowing somewhat to a broad and slightly concave apex; beneath the plate is a pair of appendages, possibly the intermediate ones, with apices resembling swans' heads, beaks directed upwards and outwards; penis very long, with two asymmetric sheaths, the one extending the entire length and the other to about midway with the apex hook-like and turned inward; in a balsam preparation a third hook or tube may be seen, towards the base, directed to one side; lower penis-cover very broad with a deep, ventral keel furnished at the apex with a pair of divergent bristles; side-pieces of the ninth segment very large, stems slender, apices clavate with upper and apical margins serrate; inferior appendages from the side and also from beneath, broad and long; from beneath, with sinuous inner and outer margins, apices broadly hooked, and directed inward; there is a hooked process towards the centre of each appendage on its inner surface, directed inwards; ventral margin of the ninth segment widely excised, with the base of the excision slightly produced and rounded.

Genitalia, ♀. From above, the terminal segment is produced into a narrow, ovate plate; from beneath, at the base of this plate, is a strongly chitinised lobe, narrower at the base than at the truncate and serrate apex which is set with two long outer and two shorter inner bristles; on each side of this lobe is a membranous finger terminating in a long bristle; the ventral segment below is sinuously concave at its apex and bears on its surface, towards the centre, a strongly chitinised structure with a wide, excised apex and slender stem.

Length of anterior wing, ♂ 1·75 mm., ♀ 1·5 mm.

Mexico: Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ in the collection of the British Museum; other paratypes ♂ and ♀ from the same and neighbouring localities in the British Museum and the collection of Dr. G. Ulmer, of Hamburg.

Exitrichia oxima sp. n. Fig. 24.

Wings dark fuscous; insects particularly small.

Genitalia, ♂. Ninth dorsal segment produced in a broad plate with a broad, punctate, lunate patch in the basal half and a broad, truncate apex with each apical angle furnished

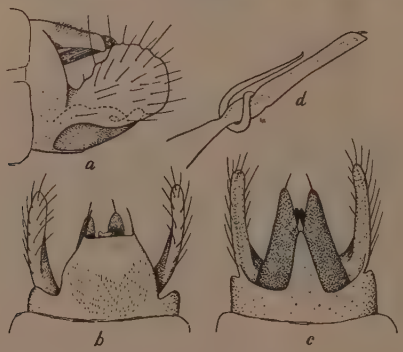


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Fig. 24, *a–d.*—*Exitrichia oxima* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral, *d.* penis.

with a stout, slightly incurved bristle; there are two projecting angles at the base, as seen from above; penis straight with the usual tube curved round the centre and continuing from there midway to the apex parallel with the stem; side-pieces of the ninth segment with constricted stems and enormously dilated apices, upper margins serrate; inferior appendages from beneath, forming two blackened, finger-like, tapering processes, each with

an upper branch which, from the side, can only be seen in a balsam preparation; from beneath, the ninth ventral segment appears to be produced in a long, narrow, triangular process which, however, is somewhat obscure.

Length of anterior wing, ♂, 1·25 mm.

MEXICO: Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ in the collection of the British Museum; other paratypes from the same and neighbouring localities, in the British Museum and the collection of Dr. G. Ulmer, of Hamburg.

Dolotrichia gen. n.

Spurs, 0, 2, 3; ocelli present; anterior wing short, tapering gradually to an acute apex; posterior, with the costal margin much elevated towards its base, after which it is very narrow and pointed; in the ♂, there is a large dorsal plate, the apical angles of which are produced into large, inturned and strongly chitinised hooks; no ventral process.

The genus belongs to the *Exitrichia* group, from which it may be readily distinguished by the peculiar dorsal plate of the ♂ genitalia.

Genotype, *Dolotrichia canixa* sp. n.

25

FIG. 25, *a–c.*—*Dolotrichia canixa* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral.

Dolotrichia canixa sp. n. Fig. 25.

Genitalia, ♂. Ninth segment produced into a large dorsal plate with a broad apex; at the apical angles is a pair of broad, asymmetric hooks, the one turning downward and the other upward; on each side of the plate is a long, slender intermediate (?) appendage with a strongly fringed inner margin; each side-piece of the ninth segment is produced into a pair of slender rods of which the upper, as seen from the side, is the longer and termin-

ates in a rather more slender finger; the upper is directed upwards and tailwards, the lower tailwards so that there is an acute-angled excision between them; from beneath, the upper appears outside the lower; beneath the dorsal plate, from above, is a large, black penis, the apex bent to one side nearly at right-angles, with a small, black branch arising towards the upper surface, directed to one side and upward so that, from above, and beneath, the apex appears bifurcate; lower penis-cover, from beneath, very broad with an acute, cone-shaped apex, bearing a pair of long, widely divergent bristles on its upper surface; inferior appendages from beneath, bifurcate, the outer fork slightly longer than the inner, both forks slender and sinuous; the appendages are fused together with a small, rounded lobe between them at their bases; margin of the ninth ventral segment excised at its centre.

Length of the anterior wing, ♂, 1·5 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).
Type ♂ in the collection of the British Museum.

Dolotrichia xicana sp. n. Fig. 26.

Maxillary palpi wanting and all the antennae excepting the two basal segments; there are two median-sized, rather wide scent-organ caps at the back of the head but no scent-

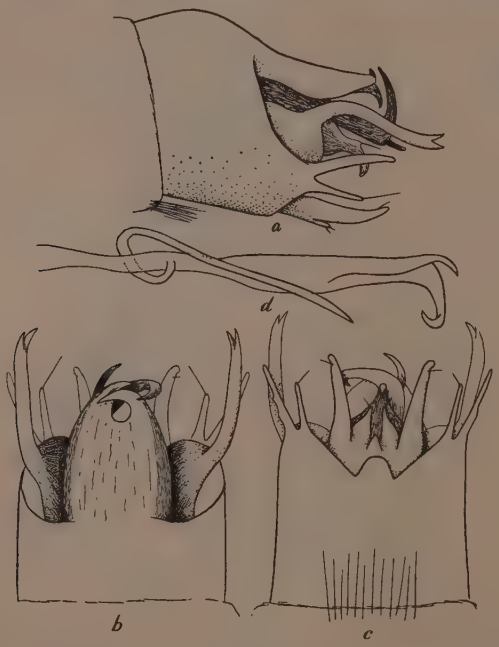

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Fig. 26, *a–d*.—*Dolotrichia xicana* sp. n. ♂; *a*. genitalia, lateral, *b*. dorsal, *c*. ventral, *d*. penis.

organ beneath them; a black, raised line at the vertex; ocelli present; legs much broken but spurs probably 0, 2, 3.

Genitalia, ♂. Ninth segment produced into a large dorsal plate which terminates at the apex in two large, inturned, asymmetric hooks; on each side is a long, sinuous inter-

mediate (?) appendage with a forked apex arising from a broad base; penis black with a black, spine-like lower sheath and a second, curling at right-angles towards the spine-like apex; each side-piece of the ninth segment is produced into a pair of divergent, rod-like processes, as seen from the side, the upper the longer; lower penis-cover forming a broad triangular plate with a downturned, hook-like apex; inferior appendages from beneath, bifurcate, outer forks about twice the length of the inner; a small triangular projection joining the bases of the appendages; margin of the ninth ventral segment widely excised with the centre of the excision produced in a rather broad, rounded lobe.

Length of anterior wing, ♂, 1·5 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*); Barranca Honda, 24.ii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Other paratypes in the British Museum and the collection of Dr. G. Ulmer, of Hamburg, from various neighbouring localities.

Guerrotrichia gen. n.

Spurs, 0, 2, 3; ocelli present; the side-pieces of the ninth segment wanting. Wings as in *Exitrichia*.

In all other respects, the genus closely resembles *Exitrichia*.

Genotype, *Guerrotrichia caxima* sp. n.

Guerrotrichia caxima sp. n. Fig. 27.

Genitalia, ♂. Margin of the ninth dorsal segment membranous, widely excised, somewhat shrunken in the example under description, apical angles produced into slender,

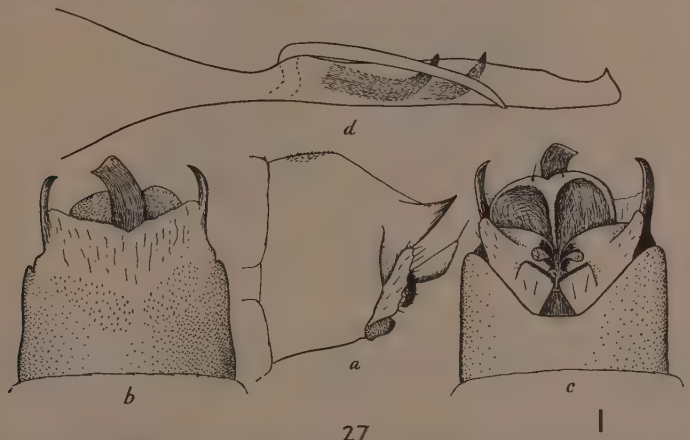

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Fig. 27, *a–d.*—*Guerrotrichia caxima* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral, *d.* penis.

incurving, horn-like processes from above and beneath; from the side, they are triangular with broad bases; penis terminating in an obliquely truncate apex with a small, lateral beak; two stout, black spurs may be seen within the main stem about midway, and nearer the base, there arises a slender, external tube, apex extending slightly beyond these spurs; the base of the penis is unusually wide; lower penis-cover broad, supported from beneath by a Y-shaped, strongly chitinised structure, apical margin rounded and slightly excised at

its centre; inferior appendages probably four-branched; from beneath, the upper branches form curved, inturned hooks with downwardly directed, blackened apices; the next branches arise from wide bases and are triangular and widely divergent, from the side, slender, directed upward and bearing a few scattered hairs; the third branches are short and rectangular, separated from the apices of the upper branches which they nearly meet, by rounded excisions; fourth branches, practically square, are seen from beneath in the centre of the widely excised ninth ventral segment.

Length of the anterior wing, ♂, 1·5 mm.

Mexico: Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes ♂ in the British Museum and the collection of Dr. G. Ulmer, of Hamburg, from the same or neighbouring localities.

Guerrotrichia cameria sp. n. Fig. 28.

Genitalia, ♂. Ninth dorsal segment produced into a large plate with a large, rounded excision at its centre, a patch of short bristles towards the basal margin; from the side,

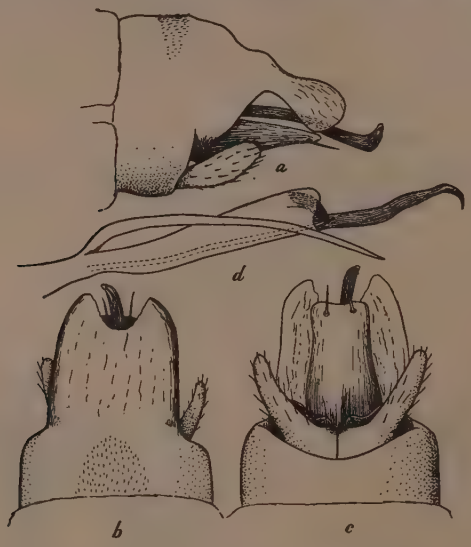

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Fig. 28, *a–d.*—*Guerrotrichia cameria* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral, *d.* penis.

the apex of the plate is clavate; penis with a pair of large, asymmetric black hooks arising from a membranous sleeve, the one produced considerably beyond the other, each considerably bent to one side; a slender external tube arises from about the centre; lower penis-cover large, apex truncate with a pair of stout bristles just before the apical margin; inferior appendages from beneath, rather slender, widely divergent, each with a black process, possibly a branch, on the upper margin towards the base.

Length of anterior wing, ♂, 1·5 mm.

Mexico: Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ in the collection of the British Museum.

Lorotrichia gen. n.

Spurs, 0, 2, 3; ocelli present; the genus differs from *Exitrichia* in having no produced side-pieces to the ninth segment; from *Guerrotrichia* in having long, slender intermediate appendages and from *Dolotrichia* in the absence of a dorsal plate with the incurved hooks. Wings as in *Exitrichia* which the genus closely resembles.

Genotype, *Lorotrichia hiaspa* sp. n.

Lorotrichia hiaspa sp. n. Fig. 29.

Genitalia, ♂. Ninth segment produced at the centre of its dorsal margin; seen from the side, the produced centre is elevated in a triangular process; intermediate appendages long and slender, arising from broad bases; from the side, in a transparent preparation, it is

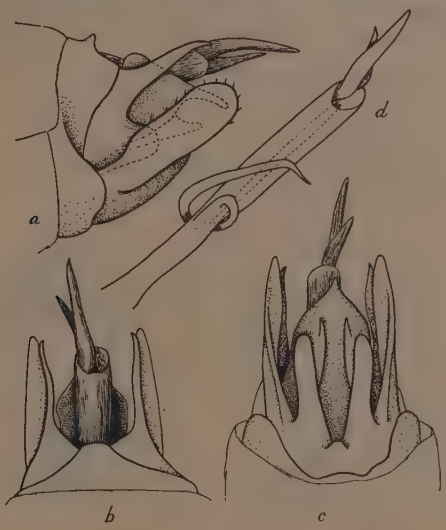

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Fig. 29, *a–d.*—*Lorotrichia hiaspa* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral, *d*, penis.

seen that the bases are produced into rather deep, rounded lobes; penis and sheaths projecting from a wide sleeve, the sheaths asymmetric, terminating in thick, black spurs; in a transparent preparation may be seen a small tube curling round the centre of the penis, projecting to one side; lower penis-cover wide, narrowing abruptly to a long finger-like, somewhat downturned apex; there is a pair of narrow, hooked processes situated towards the centre of its ventral surface, directed posteriorly; inferior appendages bifurcate, from above, long and narrow, about the same length as the superior appendages; from the side, wide with rounded apices; from beneath, the second branches arise side by side, rather long and stout and separated from each other at the base, by a small, triangular process; margin of the ninth ventral segment widely excised.

Length of anterior wing, ♂, 1·75 mm.

Mexico: Chiapas, Dolores, 16.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum, paratypes ♂ in the British

Museum and the collection of Dr. G. Ulmer, from the same and neighbouring localities.

Mayatrichia gen. n.

Spurs, 0, 2, 4; ocelli present; anterior wing broad, apex scarcely produced; posterior wing with the costal margin elevated towards the base, remainder of the wing produced but not particularly acute; neuration fairly complete; genitalia as given in the specific descriptions.

Genotype, *Mayatrichia ayama* sp. n.

The examples of the genus at present available are all incomplete.

Mayatrichia ayama sp. n. Fig. 30.

Genitalia, ♂. Margin of the ninth dorsal segment produced into two rounded lobes with an excision between and small triangular projections at the lateral angles; there is a

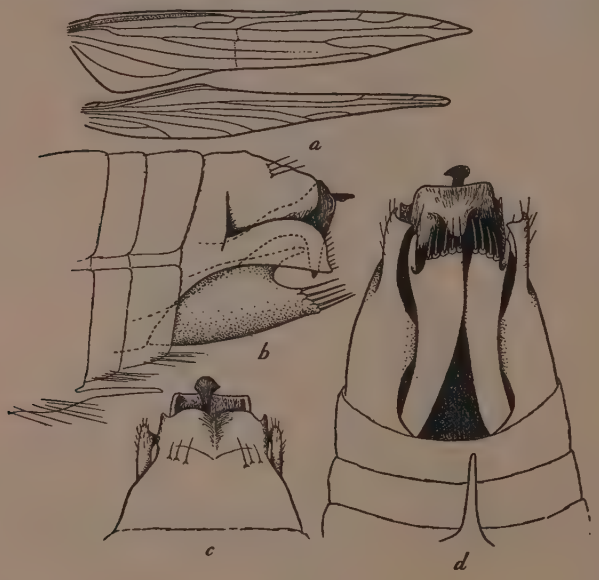

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Fig. 30, *a–d*.—*Mayatrichia ayama* sp. n. ♂; *a*. wings, *b*. genitalia, lateral, *c*. dorsal, *d*. ventral.

strong ridge before the apex, conforming with the outline of the apical margin and on the basal side of this ridge are two groups of stout bristles, three to each, arranged in line and set towards the side of the segment; the penis is long and slender, without, apparently, an external tube curled round the centre; apex rather clavate with a pointed "beak"; lower penis-cover trough-shaped; from above and beneath, apical margin truncate; from the side, there is a long, triangular, downwardly directed extension with an acute apex; side-pieces of the ninth segment from beneath, slender, with concave apical margins; from the side, broad towards the apex, with a very convex upper and straight lower margin, apex somewhat acute, upper margin, towards the apex, set with stout bristles; inferior appendages from beneath, long, separated at their bases but approximating and touching

towards the apices where they are slightly separated; each apical margin truncate, set with four or five strong bristles or spines and with the outer apical angle produced in a slender finger separated from the rest of the appendage by a rounded excision; a long pointed process to the sixth ventral segment.

Length of the anterior wing, ♂, 1·75 mm.

MEXICO: Guerrero, Cocula, 27.ii.1935 (*A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes in the British Museum and the collection of Dr. G. Ulmer, all from the same or other localities in the neighbourhood.

Mayatrichia rualda sp. n. Fig. 31.

Genitalia, ♂. Ninth dorsal segment produced into a large dorsal plate, apical margin from above, forming two rounded lobes with an excision between; midway across the segment is a ridge, also in the form of two rounded lobes separated by an excision; this

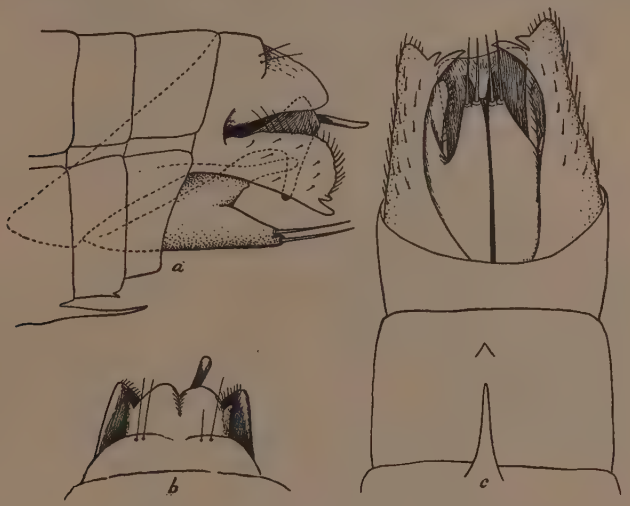

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FIG. 31, *a–c.*—*Mayatrichia rualda* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral.

ridge forms the base of the dorsal plate which, from above, carries a pointed process on each lateral margin; penis long and slender, without spines or spurs; lower penis-cover from beneath, broad, apical margin truncate or perhaps very slightly concave; from the side, the apex is strongly produced into a large, downwardly directed process having the appearance of a slipper with the toes directed downwards; side-pieces (?) of the ninth segment from beneath, broad at the base, inner margins concave, outer straight, apical margins truncate, each with a small pointed process towards the centre and a long, pointed inner apical angle, both directed inwardly; from the side, upper margin fringed and rounded, particularly towards the apex, of which the lower apical angle is produced into a pair of small processes, the lower the longer; inferior appendages from beneath, large, approximating and nearly touching towards their apices which are slightly separated; the apical margin is bifurcate to leave a large outer and an inner process with a narrow, truncate apex bearing a pair of very stout bristles or spines; from the side, the outer fork can only be seen in a balsam preparation and appears as a slender finger in front of the inner.

A long, slender process to the sixth ventral segment and a very short, triangular one to the seventh.

Length of the anterior wing, ♂, 2 mm.

Mexico: Chiapas, Barranca Honda, 24.ii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum; paratypes ♂ in the British Museum and the collection of Dr. G. Ulmer, from the same or neighbouring localities.

Polytrichia Sibley.

Polytrichia Sibley, 1926, *Bull. Lloyd Libr.*, **27** (Ent. 5) Trichoptera : 102.
Ochrotrichia Mosely, 1934, *Trans. R. ent. Soc. Lond.*, **82** : 162–163, fig. 56, syn. nov.

The genotype *P. confusa* is a north American insect. It is interesting to find that the genus is well represented in central America.

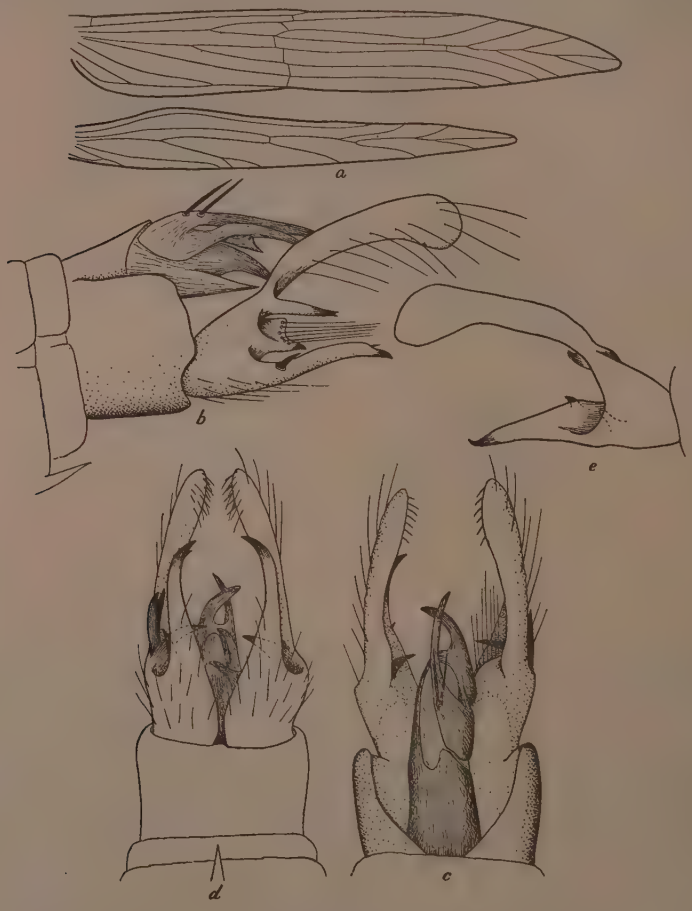

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Fig. 32, *a–e*.—*Polytrichia arranca* sp. n. ♂; *a*. wings, *b*. genitalia, lateral, *c*. dorsal, *d*. ventral, *e*. the left inferior appendage, lateral.

The Jamaican species *Ochrotrichia insularis* must be transferred to this genus.

Polytrichia arranca sp. n. Fig. 32.

Genitalia, ♂. Ninth dorsal segment widely excised back to the apical margin of the eighth; in the excision is a complicated, asymmetrically branched upper penis-cover (?), with two long, peg-like, black spines situated about midway on one of its branches; the left branch is apparently articulated to the penis-cover at its base; beneath the cover but not visible from above, is a long, semi-transparent plate, broad at its base, as seen from the side, with the upper margin slanting downward to an acute apex which, from beneath is spatulate; penis apparently a long, slender tube entirely withdrawn in the example figured; inferior appendages asymmetrically branched; the left appendage more complicated than the right; there is a long upper branch to each, dilated at its apex, arising from a much forked basal portion as seen from the side; in the left branch, seen from the side, there arises in the basal portion, between two large and distinct forks, a rather broad process fringed with long hairs; this process is entirely wanting in the right branch; the lower fork of each bears a strong, black spine towards its base, directed posteriorly; from beneath, the lowest forks are seen to be long and caliper-shaped but rather shorter than the main branches and with acute apices; a short, pointed process to the seventh ventral segment.

Length of the anterior wing, ♂, 3 mm.

Mexico: Chiapas, Barranca Honda, 24.ii.1931 (*A. Dampf*).
Type ♂ in the collection of the British Museum.

Polytrichia aldama sp. n. Fig. 33.

Genitalia, ♂. Ninth dorsal segment widely excised half-way towards the apical margin of the eighth, the lower half from the side, large and quadrate; from beneath, produced at the centre of its apical margin; in the excision is an asymmetric penis-cover (?) forming two branches, the left branch (in the figure) with a bulge on its inner margin about midway, the branches curving towards each other; from the side, the apex of the right branch directed downward; penis very slender, reaching to the apex of its cover; inferior appendages very large and long; from the side, somewhat quadrate with the upper apical angle produced and rounded; they arise from slender stems; from above and beneath, outer angles produced and rounded with right-angled excisions along the inner margins towards the apices; inner apical margins set with strong teeth, longer along the basal margins of the excisions; a ventral process to the seventh ventral segment.

Length of the anterior wing, ♂, 2 mm.

Mexico: Chiapas, Esmeralda, 19.xi.1930 (*A. Dampf*).
Type ♂ in the collection of the British Museum. Paratypes in the British Museum and the collection of Dr. G. Ulmer, from the same and neighbouring localities.

Polytrichia tenanga sp. n. Fig. 34.

Antennae about twenty-six-segmented.

Genitalia, ♂. Apical margin of the ninth dorsal segment widely excised, the excision quadrate; in the excision may be seen a complicated series of asymmetric, twisted spines, possibly forming upper and lower penis-covers; the penis itself is a narrow tube with perhaps a small, sagittate apex; inferior appendages very long and narrow, much longer than in *aldama*; seen from the side, they have sinuous upper and straight lower margins; the lower margins are lined with evenly-spaced black teeth so that they resemble the jaws of an alligator; a short ventral process.

Length of the anterior wing, ♂, 2 mm.

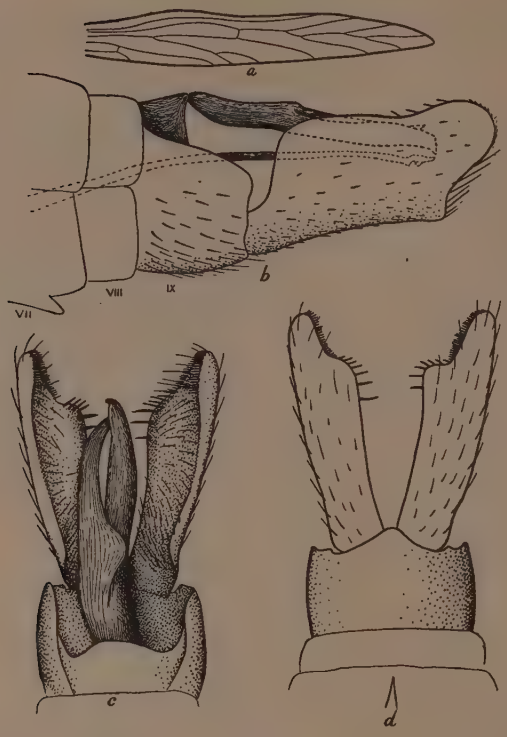

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Fig. 33, *a–d.*—*Polytrichia aldama* sp. n. ♂; *a.* posterior wing, *b.* genitalia, lateral, *c.* dorsal, *d.* ventral.

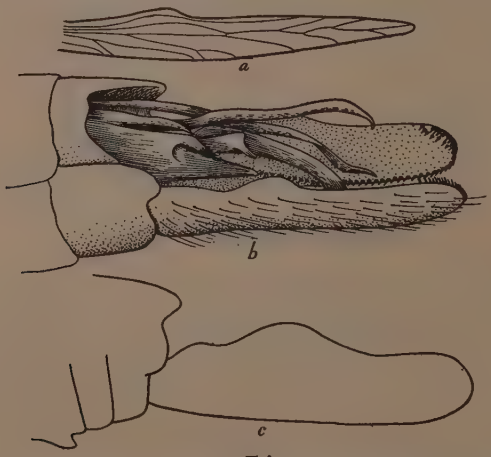

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Fig. 34, *a–c.*—*Polytrichia tenanga* sp. n. ♂; *a.* posterior wing, *b.* genitalia, obliquely dorsal, *c.* inferior appendage, etc., lateral.

Mexico : Chiapas, Saltenango de la Paz, 15.iii.1931 (*A. Dampf*).

Type and paratypes ♂ and ♀ from the same and neighbouring localities in the collection of the British Museum. Paratypes also in the collection of Dr. G. Ulmer.

Zumatrichia gen. n.

Spurs, 1, 3, 4. Antenna with about 20 segments, basal segment very large, with a large, round lobe arising from its lower surface; ocelli present but apparently only two in number; maxillary palpi: first and second segments short, third rather longer than the fourth and shorter than the fifth which is the longest; neuration of the wings as figured.

The head, in both the species of the genus here described, is unusually formed, with a curious structure at the base of each antenna, possibly a scent-organ. It seems clear that there are only two ocelli, a unique condition as far as is at present known, in the Trichoptera.

Genotype, *Zumatrichia filosa* sp. n.

Zumatrichia filosa sp. n. Figs. 35 and 36.

The general characters are given in the generic description.

Genitalia, ♂. From above, the ninth segment is very long, with a rounded, excised apical margin, apical angles produced into short processes; there is a membranous dorsal

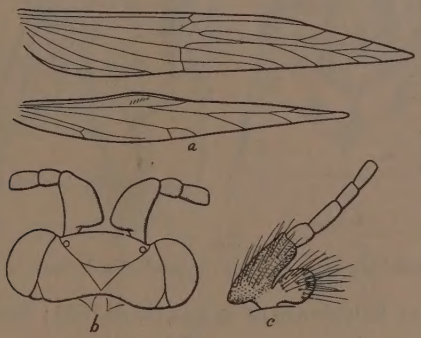

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Fig. 35, *a–c.*—*Zumatrichia filosa* sp. n. ♂; *a.* wings, *b.* head, dorsal, *c.* basal segments of the antenna.

plate, rather inflated from the side; from the side, the apex of the ninth segment is trifurcate, the middle fork rather long, acutely triangular and directed downward; the upper, blunter and directed distally, the lowest is merely a finger-like base from which arises a very long, stout, black bristle; beyond the ninth segment is an upper penis-cover: from above, long and broad with a sub-acute apex; hidden beneath this is a series of three or four strongly chitinised, long, asymmetric spines, of which the apex of the outer is curved upwards; lower penis-cover from beneath, appears as a pair of rounded lobes, side-by-side, with the inner apical margins curving downward and joining each other to make a broad hook, acute from the side; from this aspect, the lower penis-cover is deep, with the upper margin very convex; from the side, the margin of the eighth sternite is produced at its centre in a long finger, curving slightly upward, from the truncate apex of which arises a still longer curved, black spine; inferior appendages from beneath, broad, inner margins close together, apices obliquely truncate and fringed with strong hairs; from the side, there

is a strong, triangular projection of the upper margin towards the base; eighth sternite with the apical margin widely excised; a process to the seventh sternite.

Length of the anterior wing, ♂, 3 mm.

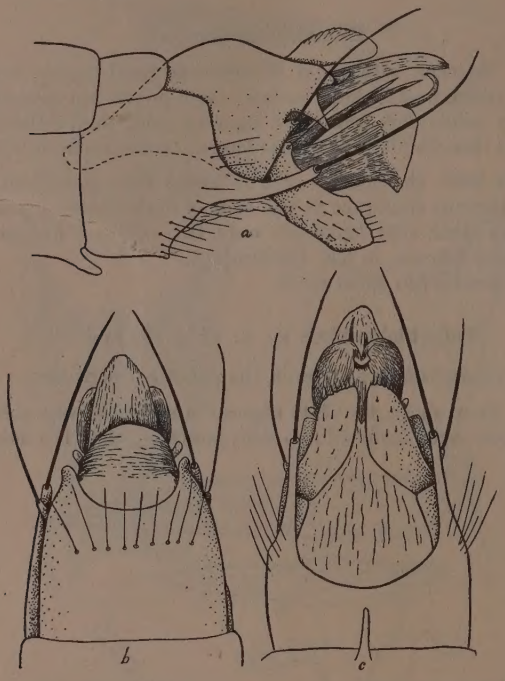

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Fig. 36, *a–c.*—*Zumatrichia filosa* sp. n. ♂; *a.* genitalia, lateral, *b.* dorsal, *c.* ventral.

Mexico: Chiapas, Saltenango de la Paz, 15.iii.1931; Santa Ana, 25.ii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Other paratypes from the same and neighbouring localities, in the British Museum and the collection of Dr. G. Ulmer.

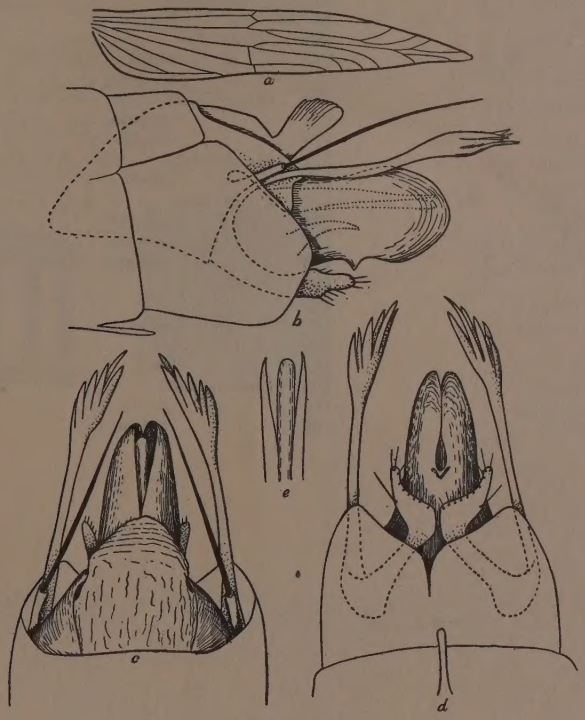
This species is characterised by the two pairs of black, spine-like bristles which almost amount to processes. They are, however, easily broken off and a careful examination should be made for their bases.

Zumatrichia galtena sp. n. Fig. 37.

Genitalia, ♂. There is a membranous dorsal plate, triangular from above, directed slightly upward from the side; it arises from the widely excised margin of the eighth dorsal segment; on each side of the excision is a small finger-like process armed with a long, black bristle; beneath each of these small processes is another longer and stouter process with the apex dilated in a broad, pectinate structure, carrying five or six long teeth; upper penis-cover large, with a dorsal excision down to its base; the penis appears to be rod-like with a slightly longer sheath on each side; below it, seen from the side in a balsam preparation, is a pair of stout, curved hooks; inferior appendages small; they arise from long

slender stems, concealed within the eighth segment which is very widely excised; they broaden as they emerge beyond the margin of the excision and then diverge, the apices produced in rather slender and fringed processes; a slender process to the seventh ventral segment.

Length of the anterior wing, ♂, 2·75 mm.



37

Fig. 37, *a–e.—Zumatrichia galtena* sp. n. ♂; *a.* anterior wing, *b.* genitalia, lateral, *c.* dorsal, *d.* ventral, *e.* apex of penis and sheaths.

Mexico: Chiapas, Saltenango de la Paz, 15.iii.1931 (*A. Dampf*).

Type ♂ in the collection of the British Museum. Paratypes ♂ and ♀, from the same and neighbouring localities, in the British Museum and the collection of Dr. G. Ulmer.

INDEX

	PAGE
Costatrichia	166
„ *lodora*	168
Dampfitrichia	169
„ *ulmeri*	169
Dolotrichia	177
„ *canixa*	177
„ *xicana*	178
Exitrichia	170
„ *anahua*	170
„ *digitata*	171
„ *eroga*	172
„ *esmalda*	173
„ *exicoma*	174
„ *olorina*	175
„ *oxima*	176
Guerrotrichia	179
„ *cameria*	180
„ *caxima*	179
Hydroptila	160
„ *icona*	161
„ *meralda*	162
„ *mexicana*	160
„ *modica*	163
Hydroptila paschia	164
Lorotrichia	181
„ *hiaspa*	181
Loxotrichia	165
„ *azteca*	165
„ *dalmeria*	166
Mayatrichia	182
„ *ayama*	182
„ *rualda*	183
Mexitrichia	158
„ *leroda*	158
Polytrichia	184
„ *aldama*	185
„ *arranca*	185
„ *tenanga*	185
Protoptila	152
„ *ixtala*	156
„ *resolda*	157
„ *rota*	152
„ *salta*	154
Zumatrichia	187
„ *filosa*	187
„ *galtena*	188